

**PRELIMINARY DRAFT BIG TUJUNGA WASH
SEMI-ANNUAL MITIGATION BANK REPORT
JANUARY – JUNE 2004**

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SECTION 1.0 – INTRODUCTION

1.1 PURPOSE OF THE SEMI-ANNUAL REPORT

The Semi-Annual Monitoring Report provides documentation of the work done at the Big Tujunga Wash Mitigation Bank during a 6-month period and a summary of the progress or success of each of the programs. Control of weeds and exotic plants is critical to the success of the revegetation program and is a primary focus of monitoring. The removal of exotic wildlife, maintenance of the formal trail system, and the community awareness program are other key elements of the Master Mitigation Plan. The Semi-Annual Monitoring Report provides a brief summary of the results of the maintenance monitoring visits and an overview of community meetings held during the reporting period, January through June 2004. The document also provides information on any problems encountered on the site, actions taken to correct any observed deficiencies, and recommendations for additional maintenance measures.

1.2 SITE LOCATION

The Big Tujunga Wash Mitigation Bank is located in Big Tujunga Wash, just downstream of the 210 Freeway overcrossing, near the city of Los Angeles' Sunland area, in Los Angeles County's San Fernando Valley. The site is bordered on the north and east by the 210 Freeway and on the south by Wentworth Street. The west side of the site is contiguous with the downstream portion of Big Tujunga Wash. The general vicinity of the site is shown in Figure 1-1. A map depicting the project location is shown on Figure 1-2.

1.3 SITE DESCRIPTION

The Big Tujunga Wash Mitigation Bank consists of approximately 207 acres of native habitats. Several plant communities are found on the site including southern arroyo willow riparian woodland, oak/sycamore alluvial woodland, Riversidean alluvial sage scrub, mule fat scrub, coastal sage scrub, non-native grassland, and disturbed areas. The Tujunga Ponds are located in the northeast corner of the site. These ponds were originally created as part of the mitigation measures for the construction of the 210 Freeway and are currently under the jurisdiction of the Los Angeles County Department of Recreation and Parks.

The Big Tujunga Wash Mitigation Bank supports two watercourses, one containing flow from Big Tujunga Wash proper, and the other conveying the flow from Haines Canyon to Big Tujunga Wash. The flow in Big Tujunga Wash, on the north side of the site, is partially controlled by Big Tujunga Dam and is intermittent based on rainfall amounts and water releases from the Dam. The flow in Haines Canyon Creek, located on the south side of the site, is perennial and originates from the Tujunga Ponds, which may be fed by groundwater and/or runoff from adjacent residential areas. The two drainages merge near the western boundary of the mitigation bank site and continue into the Hansen Dam Flood Control Basin, located approximately one-half mile downstream of the site. The site is located within a state-designated Significant Natural Area (LAX-018), and the biological resources found on the site are of local, regional, and statewide significance. An aerial photograph showing Big Tujunga Wash, Haines Canyon Creek, and the Tujunga Ponds is shown on Figure 1-3.

1.4 MASTER MITIGATION PLAN

In mid-1999, Chambers Group, Inc. (Chambers Group) prepared a Master Mitigation Plan (MMP) for the Big Tujunga Wash Mitigation Bank. The purpose of the MMP is to serve as a guide for implementation of the various enhancement programs and to fulfill the California Department of Fish and Game (CDFG) requirement for the preparation of a management plan for the site. The MMP encompasses strategies to enhance and protect existing habitat for wildlife and to create additional natural areas that will be utilized by wildlife and by numerous user groups. In addition, the MMP includes programs for the removal of

Figure 1-1 General Vicinity Map

Figure 1-2 Project Location

Figure 1-3 Aerial Photo

exotic fish and amphibians from the Tujunga Ponds, trapping to control brown-headed cowbirds (*Molothrus ater*), plans for development of a formal trails system, and development of a public awareness program at the site. Eradication of exotic plant species, including giant reed (*Arundo donax*) and tamarisk (*Tamarix* sp.), and habitat restoration and revegetation programs, which include planting and irrigation strategies, plant palettes, and long-term maintenance and monitoring of the site, are also included in the MMP. The MMP is designed to include a five-year program of implementation, maintenance, and monitoring of the enhancement strategies. Implementation of the MMP was initiated in late 2000.

SECTION 2.0 – NATIVE RIPARIAN HABITAT RESTORATION PROGRAM

2.1 PURPOSE AND GOALS

The ultimate goal of the Big Tujunga Wash Mitigation Bank site is to provide for long-term preservation, management, and enhancement of the biological resources for the benefit of the region's fish and wildlife resources. In addition, the Bank will provide compensation for loss of similar resources elsewhere in the Los Angeles Basin resulting from impacts of flood control projects. The habitat restoration program at the Big Tujunga Wash Mitigation Bank consists of a riparian habitat enhancement plan, which addresses the restoration of habitat along Haines Canyon Creek and the Tujunga Ponds. The goal of the riparian enhancement plan is to remove invasive non-native plant species, such as giant reed, and to revegetate these areas with native riparian species to support the breeding and foraging activities of a variety of sensitive riparian wildlife species, including the endangered least Bell's vireo (*Vireo bellii pusillus*).

2.1.1 Description and Locations of Native Habitat Restoration

The habitat restoration and enhancement plan will improve the habitat quality of approximately 60 acres of southern arroyo willow woodland along Haines Canyon Creek and the Big Tujunga Ponds. The southern willow riparian woodland is dominated by arroyo willow (*Salix lasiolepis*) occurring in the area surrounding the Tujunga ponds and follows the stream running along the southern section of the property (Haines Canyon Creek). Red willow (*Salix laevigata*) and black willow (*Salix gooddingii*) are common, and occasional individuals of Fremont cottonwood (*Populus fremontii*) and white alder (*Alnus rhombifolia*) are also found. The understory is dominated by eupatorium (*Ageratina adenophora*), mule fat (*Baccharis salicifolia*), and mugwort (*Artemisia douglasiana*). A small stand of southern arroyo willow riparian woodland also occurs along a wash in the northern portion of the site (Big Tujunga Creek). Mule fat scrub also occurs in the restoration and enhancement areas. This tall, herbaceous riparian scrub is dominated by mule fat.

2.2 METHODOLOGY/DATE OF IMPLEMENTATION

Restoration

Approximately one quarter of the planned riparian planting was completed during the first quarter of 2001. The remaining restoration areas were planted in January 2002. Planting consisted of installing hardwood cuttings, liners, and container plants. Cuttings consisted of willow species (*Salix* spp.), mule fat, and coastal prickly-pear cactus (*Opuntia littoralis*). Container plants included saplings of cottonwood, California rose (*Rosa californica*), and California blackberry (*Rubus ursinus*). The cuttings, liners, and container plants were installed in open areas near the ponds and the downstream portions of Haines Canyon Creek. No seeding took place in the riparian revegetation areas. No planting was implemented during the January to June 2004 period. The approximate locations of the planted areas are shown on Figure 2-1.

Biological monitors were onsite to oversee the implementation and completion of the planting in the restoration areas. Maintenance monitoring was initiated in the riparian enhancement areas after planting was finished.

2.3 PROJECT MONITORING STATUS

Maintenance, Monitoring, and Reports

Maintenance monitoring of the planted areas was initiated immediately after the partial planting was completed in February 2001. The semi-annual inspection for 2004 was conducted on May 18. Monitoring summaries for the riparian planting areas are included in the annual and semi-annual monitoring reports for the Big Tujunga Mitigation Bank Restoration (Appendix A). Semi-annual monitoring visits of the planted areas will continue through January 2005.

Figure 2-1 Riparian Restoration Areas

2.4 RESULTS

Planting in Revegetation Areas

The riparian plantings areas have increased vegetatively since the November 2003 annual inspection. The willow and mule fat cuttings surviving from initial drought and vandalism have grown well. Generally, the cuttings that grew the most vigorously were located in close proximity to the creek or in areas where the water table is not far below the ground surface. Most of the cottonwood trees that were initially planted appeared to be dead, most likely due to the lack of water. The surviving cottonwood trees were healthy and growing well. The remaining California blackberry and California rose plants that were initially installed were small, but appeared healthy.

Resprouts of giant reed were observed intermittently throughout the riparian restoration area. Most of these resprouts had been recently treated with herbicide. Numerous tree of heaven (*Ailanthus altissima*) saplings were observed near the stream and pond area, and near planting areas 9 and 17. This invasive exotic species is invasive and can become a problem.

Enhancement/Trails Reclamation

Minimal trail maintenance was required during the first half of 2004 because the trails generally remained clear and free of obstacles. The closed trail between the two ponds showed continued signs of use. A makeshift bridge of branches had been erected by local users of the site.

Overall Site Conditions

The large areas that were initially cleared of giant reed continue to remain mostly free of this invasive species. Maintenance to clear the site of giant reed occurred during monthly maintenance periods. Control of other exotics, including castor bean (*Ricinus communis*), occurred during monthly maintenance periods during the first half of the year and is expected to continue throughout 2004.

Maintenance Recommendations and Remedial Actions

Revegetation Areas

The low survival of cuttings after the initial planting indicated that there was insufficient water available to the plants for proper establishment. In the future, container plantings should be used for any required replacement planting instead of liners (when possible) because the container plants have root systems that are more developed and should be able to establish more quickly. Cuttings and liners can be installed in areas immediately adjacent to the stream or in lower areas that are closer to the ground water table; however, replacement planting is not recommended at this time, as natural recruitment has proven to be more successful in these areas than the installed plants. The thick giant reed mulch has begun to break down. Installation of a seed mix of riparian understory plants is recommended.

The resprouts of giant reed should continue to be treated with herbicide. Continued aggressive abatement is required to control this invasive plant species. Other exotic species, such as tree of heaven (*Ailanthus altissima*), Chinese elm (*Ulmus parvifolia*), edible fig (*Ficus carica*), and ivy (*Hedera helix*) should also be removed. No water hyacinth or tamarisk was observed during the inspection.

No additional maintenance recommendations or remedial actions are required at this time.

SECTION 3.0 – COAST LIVE OAK/SYCAMORE WOODLAND REVEGETATION PROGRAM

3.1 PURPOSE AND GOALS

The goal of the revegetation plan was to create a coast live oak/sycamore woodland with an undifferentiated coastal sage scrub understory in the revegetation areas on the site previously occupied by non-native grasslands. The composition of these revegetation areas when mature will support the breeding and foraging activities of a variety of sensitive species, including red shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), and coastal California gnatcatcher (*Polioptila californica californica*). The mature revegetation area will also provide an additional buffer between the urban areas and the riparian zone. The revegetation program consists of various tasks from preparing the areas prior to planting to installing container plant and seed materials, and includes provisions for the maintenance and monitoring of the site.

3.2 METHODOLOGY/DATE OF IMPLEMENTATION

General

Initial planting was implemented in late 2000. Replacement plantings were installed February 2002. Pest abatement activities were initiated in April 2002 to prevent continuing underground herbivory of installed plants by gophers. Monthly monitoring visits were conducted by a Chambers Group restoration specialist starting in November 2000 and continuing through November 2001. A semi-annual inspection was conducted in May 2003, and will continue for the remainder of the upland restoration time period ending in 2005. After each monitoring visit, the Chambers Group Restoration Specialist incorporated the description of the site conditions and provided recommendations for changes in maintenance activities into the semi-annual or annual report. The semi-annual monitoring inspection report for 2004 is included as Appendix A. Field data sheets are provided in Appendix B.

Location

Approximately 11.7 acres of habitat was created on the terrace south of Haines Canyon Creek along Wentworth Street. The upland terrace is elevated on a bench approximately 25 feet above the riparian habitat. Approximately 4.8 acres of this area was planted primarily as a coastal sage scrub community with occasional sycamores (*Platanus racemosa*). The remaining 6.9 acres was revegetated as coast live oak/sycamore woodland with an undifferentiated coastal sage scrub understory. Installation was completed November 22, 2000. The portion of the upland area that is covered with the concrete pad from the old asphalt plant was not included as part of the upland revegetation area. For convenience in monitoring and reporting, the restoration area was divided into sections. Sections 1 through 5 are the woodland revegetation areas, and Sections 6 and 7 are the coastal sage scrub areas. Figure 3-1 shows the locations and types of restoration and enhancement areas on the site.

Enhancement/Trails Reclamation

No additional trails were reclaimed or closed during 2004. The existing trails in the upland habitat were kept clear of debris and vegetation as necessary during monthly maintenance periods.

3.3 SITE EVALUATION AND RECOMMENDATIONS

Overall Site Conditions

The semi-annual maintenance monitoring inspection was conducted on May 18, 2004. The overall cover of native vegetation has increased, although weeds were very abundant throughout the restoration area. Large areas bare of shrubs occurred in Section 6, and few of the installed container plants in Section 7

were living. Weed abatement on most of the site has not been adequate. Sections 2, 3, and 4 were

Figure 3-1 Upland Restoration Area

thickly vegetated by non-native annual weeds. Sections 5, 6, and 7 had lesser amounts of weeds that occurred mainly in patches. Weedy non-native plants included black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), horehound (*Marrubium vulgare*), castor bean, filaree (*Erodium* spp.), and brome grasses (*Bromus* spp.). Erosion control devices have not been utilized and are not required for the site at this time. All trails in the restoration area are well marked, clear of weeds and debris, and in good repair. Recruitment of native plants was observed throughout the site, although very little recent germination was seen.

The irrigation system for the site is not currently in use. The irrigation hose in Section 7 has been chewed into many pieces and was littering the area. The fencing, trails, and habitat restoration signs were in good condition. There was no sign of vandalism in any of the areas. A small amount of gopher activity was observed in several areas of the site, particularly on the southern portion of the site.

Several herbivory cages were observed in Sections 1, 2, 3, and 6. Herbivory by gophers did not appear to be a problem at the time of the inspection. Pest abatement activities consisting of placing "gopher bombs" in recently excavated burrows have been effective. This method exterminates the animal underground without exposing predators to harmful substances.

Maintenance Recommendations

Weeds were abundant throughout much of the site. Weed abatement activities should be continued as necessary to prevent weed competition with planted native species and to prevent the increase of the weed-seed bank. Future maintenance should be conducted before non-native plants go to seed. A greater amount of seeded native species would aid in crowding out non-native weeds. Remedial seeding throughout the areas of the revegetation area should be considered for the next appropriate planting season (winter 2004/2005).

The unused irrigation hosing should be removed. All herbivory cages should also be removed. It is recommended that the control of gophers by the above measure should continue to be utilized as necessary, to prevent future herbivory.

SECTION 4.0 – EXOTIC PLANT REMOVAL PROGRAM

4.1 INTRODUCTION

The exotic plant removal program includes the removal of non-native plant species from Haines Canyon Creek, Big Tujunga Wash, and Tujunga Ponds. These invasive weeds compete with the native vegetation for light, water, and nutrients, and they also decrease the ecological value of the area. Removal of giant reed and other weed species will reduce competition pressure on the native southern arroyo willow plant community and allow for rapid recovery of the native habitat. The target non-native species include giant reed, water hyacinth (*Eichhornia crassipes*), and tamarisk (*Tamarix ramosissima*). Other target species include pepper trees (*Schinus molle* and *S. terebinthifolia*), castor bean, umbrella sedge (*Cyperus involucratus*), mustards (*Brassica* sp.), and tree tobacco (*Nicotiana glauca*), among others.

4.1.1 Purpose/Goals

Enhancement is intended to improve the habitat value of an existing plant community. The overall goal of the riparian enhancement plan is to remove invasive non-native plant species and to replant these areas with native riparian species. The enhancement plan consists of various tasks designed to remove the non-native species, prepare the areas prior to planting, and to install cuttings and container plant materials after the exotic species have been removed. The following sections describe the methods used for exotic plant species removal, and the progress of the program from January 2004 through June 2004.

4.2 METHODS

4.2.1 Giant Reed Treatment

Although treatment with Rodeo[®] was conducted, giant reed removal was not necessary during the first half of 2004. Giant reed resprouts are treated with herbicide when appropriate. The regrowth is allowed to reach 3 to 4 feet in height, and is then treated with a highly concentrated (up to 100 percent) solution of Rodeo[®] using hand-held equipment. Treatment occurred during monthly maintenance periods. Retreatment will be continued throughout the growing season of 2004/2005 to prevent competition within the newly planted areas.

4.2.2 Water Hyacinth Eradication

No water hyacinth removal was required during the first half of 2004.

4.2.3 Tamarisk Eradication Technique

No tamarisk was observed on the site and removal was not necessary during the first half of 2004.

4.2.4 Other Exotics

Removal of several other exotic species, such as Mexican fan palm (*Washingtonia robusta*), was done by hand.

4.3 STATUS/RESULTS

Minimal herbicide treatment was required to control giant reed growing within and adjacent to preserved vegetation in the riparian areas. New regrowth was seen throughout the site in the last weeks of May and had been treated with herbicide by the contractor. No water hyacinth regrowth was observed. No tamarisk removal was required as no regrowth was observed. The contractor has concentrated mainly on giant reed and a few other target non-native species, including palm trees (*Washingtonia* sp. and *Phoenix* sp.) and castor bean. Other exotic species, including tree of heaven, edible fig, Chinese elm, and ivy still require removal.

SECTION 5.0 – BROWN-HEADED COWBIRD PROGRAM

5.1 PURPOSE AND GOAL

The brown-headed cowbird (*Molothrus ater*) is an obligate brood-parasitic bird species, meaning this species does not build its own nests or tend to its own young. Instead, female cowbirds deposit one or more eggs into a host species' nest, often removing or destroying some of the host eggs. Brown-headed cowbird parasitism has been linked to the decline of numerous native bird species and therefore poses a major threat to many songbirds. Additionally, some host species, including the California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher (*Empidonax traillii extimus*), have also had to contend with habitat loss and fragmentation, which increase the risk of being parasitized (Harris 1991; Laymon 1987; Mayfield 1977; Stafford and Valentine 1985). Cowbird trapping has been successfully employed as a method of controlling cowbird numbers and the level of parasitism on threatened bird species. The goal of the brown-headed cowbird trapping and removal program at the Big Tujunga Wash Mitigation Bank site is to increase the overall value of the site as a conservation bank by allowing the sensitive riparian bird species to successfully reproduce without being parasitized by cowbirds.

5.2 METHODS

5.2.1 Program Status

Cowbird trapping at the Big Tujunga Wash Mitigation Bank was implemented on March 15, 2004 and ended on July 15, 2004. The initial task was the identification of trap sites. Areas within and adjacent to the Mitigation Bank were surveyed during the two months prior to trap placement in order to determine the most appropriate trap locations. Considerations for trap location included accessibility for monitors, visibility to the target bird species, areas of known cowbird concentration or flight paths, and seclusion from the public to prevent vandalism.

The appropriate property owners (U.S. Army Corps of Engineers and private residents) were contacted and authorization was granted prior to accessing the three off-site locations. Notification and permitting letters were sent to U.S. Fish and Wildlife Service (USFWS) and CDFG prior to the start of the trapping season. Construction of the seven traps and onsite placement took place on March 11 and 12, 2004.

The lack of available decoys resulted in nonstandard decoy ratios for the first three weeks. A total of 28 decoys, 14 males and 14 females, were obtained from the Orange County Water District (OCWD) trapping program at Prado Dam on March 15, 2004. However, one female decoy died in transit, therefore a total of 27 decoys, 14 males and 13 females, were distributed among six traps at a ratio of 2:2 (male:female). The Alluvial trap had a 2:1 ratio. Prado Dam was contacted throughout the first few weeks to track the availability of additional decoys. A total of 9 female decoys were obtained from Prado Dam on April 7, 2004 and distributed among the seven traps to obtain the standard decoy ratio of 2:3.

The brown-headed cowbird trapping program generally followed the methods described in the Griffith Wildlife Biology protocol which has been adopted by USFWS as the standard trapping methodology (GWB 1994a). Placement of perches, seed, water, natural foraging pads, and shade cloth was performed during the first several days of trapping. Additionally, during the first couple of weeks, seed was thrown on top of the traps to attract cowbirds. Bilingual (Spanish and English) informational signs explaining the purpose of the traps were attached to all seven traps. A board was placed over the top slots of each trap to prevent non-target birds from entering prior to the start of trapping season. The boards were removed and all seven traps were fully operational on the first day of trapping season (March 15). Figure 5-1 shows all seven trap locations on the USGS 7.5 minute topographic quadrangle. Figure 5-2 is an aerial photograph showing the four onsite cowbird trap locations.

Figure 5-1 Cowbird Trap Locations

Figure 5-2 Onsite Cowbird Trap Locations

5.2.2 Monitoring Status

Traps were checked daily from March 15 through July 15, 2004, including all weekends and holidays falling within this time frame. Trappers collected data on the numbers of cowbirds captured, dead, and/or missing. Data on non-target birds were also recorded. Cowbird and non-target data was recorded by hand on data sheets. Newly captured cowbirds were wing-clipped and all cowbirds placed in a temporary holding cage. Non-target birds were then flushed from the trap. Daily maintenance included the cleaning and replenishment of seed and water dishes, adjustment of perches, removal of weeds within the traps, and placement of additional shade cloth as-needed.

5.3 RESULTS

A total of 89 cowbirds, consisting of 46 males, 37 females, and 6 juveniles, were trapped within the Big Tujunga Wash Mitigation Bank site and vicinity between March 15 and July 15, 2004. Of these, 18 cowbirds were trapped within the onsite traps in the Big Tujunga Wash Mitigation Bank and 71 cowbirds were trapped in the offsite traps.

Focused surveys for least Bell's vireo and southwestern willow flycatcher were conducted within the Mitigation Bank during 2004. Although least Bell's vireo were not detected, three willow flycatchers were observed in willow riparian woodland habitat within the project area during the focused survey visits. These individuals were observed during the first two surveys and not detected during the following survey visits. There was no evidence or behavioral cues observed that would suggest that the flycatchers attempted to nest at the site (Bloom and Kamada 2004). Because these sensitive species did not nest within the mitigation bank during 2004, brood parasitism on these species by cowbirds was not likely.

Unlike the previous three years of trapping when vandalism on the traps was a constant issue, vandalism did not occur during the 2004 trapping season. In addition, predation on the birds in the traps, by raptors, mammals, or snakes, was not a problem during the 2004 trapping program.

During the course of the 2004 trapping season, 182 non-target birds were captured. A total of four non-targets bird died in the traps, likely due to competition and pecking within the trap. None of the non-target birds captured were considered sensitive species by the resource agencies.

5.4 DISCUSSION

In terms of brown-headed cowbird capture rates, the 2004 trapping season was very successful and had the second highest cowbird capture rates since implementation of the trapping program in 2001. The absence of trap predation and vandalism also added to the success of the 2004 season. A total of 89 cowbirds, consisting of 46 males, 37 females, and 6 juveniles were captured in 2004. In comparison, a total of 20 cowbirds consisting of 9 males, 11 females, and 0 juveniles were trapped in 2003; a total of 173 cowbirds consisting of 66 males, 105 females, and 2 juveniles were trapped in 2002; and a total of 70 cowbirds consisting of 37 males, 24 females, and 9 juveniles were trapped in 2001. The overall trap efficiency rate for the 2004 season totaled 0.723 cowbirds caught per day and indicates a very efficient trapping program. The three offsite trap locations accounted for the majority of the cowbird captures.

The non-target mortality rate for 2004 totaled 2.2 percent, is only slightly higher than the standard 2 percent non-target mortality rate considered acceptable by the USFWS (GWB 1994b). Efforts were made to reduce non-target mortality prior to closing down traps and included switching out the aggressive decoy cowbirds. Only one trap, Trap 5 – Cottonwood, was closed down prematurely (May 19).

SECTION 6.0 – EXOTIC WILDLIFE REMOVAL & NATIVE FISH SAMPLING PROGRAMS

6.1 INTRODUCTION

Dr. Dan Holland, Dr. Camm Swift, and Mr. Robert Goodman conducted initial surveys at the site to determine the most appropriate method of eradication of exotic wildlife species and enhancement for native fishes and amphibians. The MMP provides direction for the eradication of exotic aquatic wildlife during the 5-year duration and also contains a more detailed description of the various methodologies available for exotic wildlife removal.

6.2 PURPOSE AND GOALS

At present, suitable habitat on the project site for sensitive native aquatic vertebrates is almost exclusively confined to the portions of Haines Canyon Creek downstream from the ponds. The Tujunga ponds essentially do not provide good habitat for most native vertebrate species because they support a large population of non-native predatory amphibians, fishes, and crayfish (*Procambarus* sp.). In addition, the ponds likely contribute to substantial negative impacts on the native vertebrate fauna downstream by fostering the presence of a source population of non-native invertebrates, bullfrogs (*Rana catesbeiana*), and fishes. These exotic species may directly affect natives through predation or competition, or indirectly through transmission of pathogens and/or parasites. Additionally, modification of the stream environment by the creation of cobble dams (for “swimming holes”) along Haines Canyon Creek continue to be problem for native species. These modifications exacerbate problems with control of exotic species in the stream by creating large areas of habitat suitable for exotic species and less suitable or unsuitable for native species. Removal of these cobble dams and prevention of further construction should be a high priority.

The ultimate goals of this project are:

1. to restore or create and maintain habitat for native fishes and other sensitive vertebrate species;
2. to eliminate, diminish, and/or restrict habitat which fosters the maintenance of exotic species; and
3. to engage in localized or site-by-site direct control efforts for exotic species to complement goals 1 and 2.

The exotic wildlife removal program consists of the removal of non-native fishes, bullfrogs, and red swamp crayfish (*Procambarus clarkii*) from Haines Canyon Creek and the Tujunga Ponds. Bullfrogs are not native to the area and pose a major threat to native wildlife because they have voracious appetites and prey upon the sensitive fishes, frogs, toads, and birds.

6.3 METHODOLOGY

6.3.1 Exotic Wildlife Removal

Six distinct methods are used to capture the aquatic organisms, including gill nets, small seines, crayfish and minnow traps, spearfishing, dip/lift nets, and turtle traps. “Standard” gill nets, namely five larger meshed nets which ranged from 1.5 inch (3.7 cm), 1 inch (2.5 cm), and 0.5 inch (1.2 cm), are sometimes used. Visual observations and surveys are also made. Traps are typically baited with small cans of mackerel with tomato sauce and “seafood grill” cat food with holes punched in the cans.

6.3.2 Native Fish Monitoring

At each native fish collection site, the transect is blocked at the upper and lower end with an 0.125-inch mesh seine. This is done with minimal disturbance to the transect. Then, two people seine for at least 1 hour with a variety of techniques to exhaustively sample all of the fishes. Native fishes are held in large buckets and oxygenated frequently. At the end of each collection, the native fishes are counted, their sizes are estimated to the nearest 10 centimeters, and then are released back into the transect area. In addition to collecting data on the fishes, habitat features including water temperature, substrate type, depth, width, available cover, canopy, and gradient or slope are also measured and recorded.

6.4 STATUS/RESULTS

Exotic wildlife removal efforts were not conducted during this reporting period. Upcoming sampling efforts will be conducted when feasible.

SECTION 7.0 – TERRESTRIAL WILDLIFE MONITORING

7.1 PURPOSE AND GOALS

The ultimate goal of the Big Tujunga Wash Mitigation Bank site is to provide for long-term preservation, management, and enhancement of the biological resources for the benefit of the state's fish and wildlife resources. The project site is presently used by various common and sensitive wildlife species. The primary goal of the Big Tujunga Wash Mitigation Plan is to establish breeding and foraging habitat for resident and migratory wildlife species associated with the riparian, alluvial scrub, and aquatic habitats. Observations of common wildlife and plant species within the mitigation area have been documented in previous surveys. In addition, the MMP requires that wildlife monitoring surveys for least Bell's vireo, southwestern willow flycatcher, and arroyo toad (*Bufo californicus*) be conducted in order to document use of restoration areas by sensitive wildlife species. Use of restored habitats by the following sensitive wildlife species will be considered progress indicators of revegetation success.

7.2 LEAST BELL'S VIREO

7.2.1 Methodology

Eight focused protocol surveys were conducted by qualified wildlife biologists familiar with the songs, calls, and visual identification of the least Bell's vireo. These surveys were conducted at 10-day intervals during the period from April 10 through July 31. The surveys were conducted on April 22, May 2, 13, 24, June 3, 14, 25, and July 6, 2004. No more than 50 hectares of suitable riparian habitat were surveyed by the biologist per day. All surveys were conducted between the hours of 6:00 a.m. and 11:00 a.m. and were in accordance with USFWS guidelines (2001). The surveyors conducted the surveys by walking all suitable riparian habitats, as well as stationing themselves in the best locations within the riparian habitat in order to listen and look for vireos. All vireo detection, including number of individuals, sex, age, and leg bands, were recorded on standardized data sheets.

7.2.2 Results

Least Bell's vireos were not observed or detected during the eight focused surveys at the Big Tujunga Wash Mitigation Bank project site during 2004. Additionally, southwestern willow flycatchers or western yellow-billed cuckoos (*Coccyzus americanus occidentalis*) were not seen or heard during any of the vireo surveys. However, brown-headed cowbirds were observed and heard vocalizing during the first and eighth focused vireo surveys.

7.3 SOUTHWESTERN WILLOW FLYCATCHER

7.3.1 Methodology

Five focused surveys for the southwestern willow flycatcher were conducted by Dana Kamada (TE-799568), a permitted biologist familiar with the habits, appearance, and vocalizations of the southwestern willow flycatcher. Survey methods followed the mandatory protocol developed by Sogge et al. (1997) and the subsequent revised protocol developed by the U.S. Fish and Wildlife Service (USFWS 2000). Surveys were conducted on May 19, June 1, June 23, June 29, and July 12, 2004 between dawn and 10:00 a.m., during suitable weather conditions, by walking slowly and methodically under the canopy of the willow riparian woodland. Taped vocalizations of the species were played every 75 to 100 feet in an attempt to elicit a response from potentially present individuals. The tape was played for roughly 15 seconds and then stopped for one or two minutes to listen for a response. All wildlife observed or detected during the surveys was documented.

7.3.2 Results

Two willow flycatcher locations were observed in willow riparian woodland habitat and included one pair of flycatchers that responded to taped vocalizations during the first two surveys but were not detected during the following three surveys and a single flycatcher that responded to taped vocalizations during the first survey but was not detected during the following four survey visits. Although the first two survey visits indicated the presence of willow flycatchers, it is likely that these birds were migratory or transient to the project site and did not attempt nesting. During the first two survey periods (May 15-31 and June 1-21), it is possible that migrating willow flycatchers might occur on the site. Usually, individuals are finished migrating through the southwest by the third survey period (June 22 to July 17). Therefore, unless there is evidence of nesting during the first two surveys, it is during the third survey period when detected flycatchers are likely to be resident breeders or non-breeding residents. Negative survey results during the third period indicate that southwestern willow flycatcher was not resident and did not breed onsite during 2004.

Evidence of non-native plant control (spraying and cutting) and vegetation trimming was observed during the course of the focused surveys, and specifically between the dates when willow flycatchers were detected. It is recommended that to the maximum extent feasible, non-native plant control and trail maintenance activities not be conducted during March to August, when most birds are attempting to nest. Furthermore, if a willow flycatcher is detected at the site, it is recommended that non-native plant removal activity and trail maintenance be suspended within 150 feet of the flycatcher location until the flycatcher(s) are no longer observed at the location.

7.4 ARROYO TOAD

7.4.1 Methodology

Surveys are conducted annually by a qualified biologist familiar with the habits, appearance, and vocalizations of the arroyo toad. Surveys follow the 1999 USFWS Survey Protocol Guidelines for the arroyo toad. The protocol states that at least six surveys must be conducted during the breeding season, which generally occurs from March 15 through July 1, with at least seven days between surveys and with at least one survey per month during April, May, and June. Surveys include both daytime and nighttime components conducted within the same 24-hour period (except when arroyo toads are detected in the survey area).

Daytime surveys are conducted by walking slowly along stream margins and in adjacent riparian habitat, visually searching for (but not disturbing) eggs, larvae, and juveniles. Nighttime surveys (assuming eggs, larvae, and/or juveniles have not been detected) are conducted by walking slowly and carefully on stream banks. Surveyors stop periodically and remain still and silent for approximately 15 minutes at appropriate sites to wait for arroyo toads to call. Nighttime surveys are conducted between one hour after dusk and midnight, when air temperature at dusk is 55 degrees Fahrenheit or greater.

7.4.2 Results

Low water levels in Big Tujunga Wash during the early part of 2004 did not warrant spring surveys. Therefore, focused surveys for arroyo toad were not conducted this spring.

SECTION 8.0 – TRAILS PROGRAM

8.1 PURPOSE/GOALS

The overall goal of the trail system is to allow for recreational activity while minimizing impacts on the habitat quality at the Big Tujunga Wash Mitigation Bank site. Essential to this process is the effort of returning unnecessary trails to their natural condition for the overall improvement of habitat quality. Many of the trails occur in the riparian habitat along Haines Canyon Creek and the Tujunga Ponds. The closure of several riparian trails was essential to the success of riparian restoration and enhancement. Therefore, the trails program is an integral part of the evaluation process to help determine the success of the overall riparian restoration and enhancement program. Thus, it is evaluated and reported as part of the functional analysis of the riparian habitat and during the regular maintenance and monitoring of the riparian habitat restoration sites. It is also essential for determining if recreational use is having negative impacts on the success of the riparian restoration and enhancement program, or if wildlife use of the site is being compromised. The following sections describe implementation tasks that were conducted during the first two quarters of this year, problems that were encountered, and future proposed tasks.

8.2 TRAILS MAINTENANCE AND RESTORATION

Figure 8-1 shows the trails map of the Big Tujunga Wash Mitigation Bank. The trails map was overlaid on a 1 inch = 200 feet aerial photograph of the site and shows the trails as they existed prior to project implementation. Also shown are trails that are currently present, but that were closed (reclaimed) during the second year of implementation, and the four designated main trails that serve as safe and scenic recreational trails. The four main trails include the Water Trail, Bert Bonnett Trail Loop, Dr. Au Trail, and Pond Trail.

8.2.1 General Trail Conditions

In general, the trails were fairly well defined and free of obstacles. Because both the upland and riparian habitats have been in a maintenance-monitoring mode, it was not necessary to close any trails during the first two quarters of 2004, nor are any trail closures anticipated for the remainder of the implementation period. Monthly site visits conducted by Natures Image ensure that trails are free of obstructive vegetation and other obstacles. It has been noted that the poison oak (*Toxicodendron diversilobum*) needs to be trimmed back in several areas. Additionally, the silt fencing along portions of the creek needs to be removed. Natures Image has been informed of these trails issues.

Other trail issues include a new trail that has been created through a section of the upland planting area. Trail maintenance during the latter half of the reporting period included blocking this unauthorized trail with branches. Additionally, equestrians have begun to use a pole to practice their roping skills in the lower restoration area. Tree limbs and rocks were strategically placed in this area to discourage use of the pole. If the obstacle is not successful in deterring equestrian use of the area, then it may be necessary to have Flood Maintenance remove the pole.

As previously stated in Section 7-Terrestrial Wildlife Monitoring, it is recommended that to the maximum extent feasible, non-native plant control (spraying and cutting) and vegetation trimming in the riparian areas should not be conducted during March to August which is the breeding season for birds.

The erosion gully that was present in the upland habitat area was repaired by Flood Maintenance during this reporting period. The runoff is now being diverted via a pipe flume. Figures 8-2a and 8-2b show the upland erosion area before and after installation of the pipe flume. The railroad ties that were used to block off the erosion gully below the Cottonwood bluff is still intact and has been successful in preventing foot and equestrian traffic through the gully.

Figure 8-1 Trails Map



Figure 8-2a
Erosion gully near the upland area before repair work.



Figure 8-2b
Erosion gully near the upland area after repair work.

8.2.2 Rock Dams

Rock dams do not seem to be as prevalent during this reporting period. Public education regarding the harmful effects on the dams may be contributing to the lack of dams.

A rock dam removal day was held on April 3, 2004 in conjunction with the Tujunga Watershed Council and Stakeholders group and the Community Awareness Committee (CAC). Due to the fact that neither Camm Swift nor Dan Holland were able to attend, no rock dams were removed that day. However, a tour of the site was given to 27 adults and children, which included cub scouts, boy scouts, and the optimist club. They collected four garbage bags of trash, removed two fire pits, and removed many lures and fishing hooks. The Foothill Sentinel, a local newspaper, wrote an article on the event. Another rock dam removal day will be planned based on Camm Swift's availability. Additional nature hikes are to be organized by CAC members and Public Works.

8.2.3 Information Kiosks and Informational Trail Signs

The kiosk located in the Cottonwood area is intact; however, the display boards need to be replaced. Although the display boards were made with a special ultraviolet (UV) coating to protect them from sun damage, the extreme conditions (heat, sun, and rain) have affected the boards. The kiosk on the haul road has not been repaired since it was vandalized in early June 2003. The kiosk will be renovated so that there are no doors or moveable pieces that can be broken off.

8.2.4 Unauthorized Overnight Campers and Trail Safety

The Los Angeles Homeless Services Authority (LAHSA) conducted a site visit in March, as there were campers to the west of the Cottonwood entrance, with fire pits. According to Patti Friedman from Supervisor Antonovich's office, charcoal and wood cannot be burned without a permit. Use of the site by unauthorized overnight campers continues to be an issue. However, unauthorized encampments were not observed during a trails maintenance visit in June 2004.

8.2.5 Trash Receptacles and Portable Toilets

Due to heavy trail use, trash continues to be a problem on site even with the second trashcan that was added at the Wheatland/210 gate. CAC members and visitors removed four bags of trash from the site on April 3 during a tour of the mitigation bank. Flood Maintenance will continue to pick up the trash twice a week, on Wednesdays and Fridays. The portable toilet in the Cottonwood area appears to be in good condition, however the portable toilet near the ponds need to be serviced.

SECTION 9.0 – PUBLIC AWARENESS AND OUTREACH PROGRAM

9.1 PURPOSE AND GOALS

Numerous key stakeholders and community groups have shown great interest in the Big Tujunga Wash Mitigation Bank project. These stakeholders include elected officials who are sensitive to the needs of the community; local, state, and federal agencies; and local residents. Given the community's involvement with the site, the goal of the Public Awareness and Outreach Program is to keep the stakeholders and public informed of the ongoing enhancement activities at Big Tujunga Wash Mitigation Bank. Among the provisions of the Program are bi-annual newsletters (*The Big T Wash Line*) designed to provide current information regarding restoration activities on the site, and regularly scheduled community meetings to give interested parties an opportunity to participate in the management of the site.

9.2 ACTIONS TAKEN

9.2.1 Community Advisory Committee Meeting

The CAC meetings will be held on a bi-annual basis for the remainder of the implementation period (2004 and 2005). The CAC consists of residents and representatives from local community organizations as well as agency and elected officials. The last CAC meeting was held on April 29, 2004 at the Hansen Dam Equestrian Center.

Before the meeting, a meeting reminder was mailed to all stakeholders. After the meeting, the minutes, action list, attendance, and wall graphics were mailed to all meeting participants. Additionally, the spring edition of the *Big T Wash Line* was prepared and sent to Public Works. The site advisory panel present at the meeting included John Burton and Michele Chimienti of Public Works; Mari Schroeder and David Carr of Chambers Group, and Eileen Takata of Moore Iacofano Goltsman, Inc. (MIG). The agenda for the meeting included a review of the action items from the previous CAC meeting (December 2003), an overview of programs to be implemented in 2004, and site maintenance issues. A brief summary of the key points discussed at the meeting is provided in the next sections. The full text of the meeting minutes and attendance is provided in Appendix C.

9.2.1.1 Action Items From CAC Meeting

The following bulleted items summarize the current action items discussed during this reporting period:

- General Site Signage/Kiosks: Public Works is still in the process of repairing the kiosks by removing the doors so that they can no longer be broken or vandalized. A new design for the kiosks will include plexi-glass (or similar material) to be put flush against the display board (information will be permanent). Chambers Group will prepare new trail maps and will provide an updated trails map to Carol Roper, a CAC member.
- Tamayo Property: Public Works has sent their documentation in for purchasing the land from the City. Pat Davenport offered to help keep track of the paperwork as it goes through the appropriate channels. The 1-acre property will need trash removal and the encampment relocated. The land will be incorporated in the mitigation bank later. Unauthorized overnight campers have occupied a shack on the property. The City needs to start the notice of violation immediately. The LAHSA has had trouble removing the unauthorized overnight campers from the site. LAHSA cannot remove the unauthorized overnight campers; they can only offer help.
- Unauthorized Overnight Campers: Unauthorized overnight encampments are a constant issue at the mitigation bank. The LAHSA was out in March because there were campers to the west of the Cottonwood entrance, with fire pits, etc. Patti Friedman from Supervisor Antonovich's office noted that no charcoal or wood could be burned without a permit.

- Site Safety: John Burton said that the Office of Emergency Services is working on being able to patrol the site. Call Los Angeles Police Department Dispatcher at (818) 734-2223 or 311 to report any incidents. There is a grid map at www.tujungawatershed.org for Hansen Dam and part of the mitigation bank that can also be submitted when an incident is observed. Incident report forms can also be found on the web site.
- Trail Signage: Chambers Group is working with Terry Kaiser, a CAC member, and the volunteers with the Equestrian Trails, Inc. and the California Trail Users Coalition, who will help to make and install the signs. Wood signs would be stained and pressure treated. The trail names will be routed in the post with aluminum placards. The signs will be three feet above ground. Carol Roper will fine-tune the number of posts that will need replacing. Each will be numbered and keyed on the map. The actual locations will be worked out in the field when the signs are ready.
- Graffiti: Extensive graffiti and spray cans have been observed. CAC members have been directed to contact the Public Works graffiti hotline number at (800) 675-4357.
- Pond Crossing/Footbridge: Camm Swift reports that the pond is doing well and logs were removed. The signs stating no release of exotics have been removed several times. Signs may need to be attached to trees.
- Water Quality Analysis: The golf course will begin using Primo to control for weeds. The water quality monitoring program will now test for Primo. Recycled/reclaimed water will be used on the golf course. The golf course water quality data should be public record because it is a requirement of their conditional use permit (CUP). Public Works will request a copy of the CUP. The CAC members would like to know how recycled water is addressed in the Environmental Impact Report (EIR) for the golf course. Additionally, the USFWS will be contacted to determine salt effects on the threatened Santa Ana sucker (*Catostomus santaanae*) and on alluvial scrub habitat. CAC will receive a copy of the water quality monitoring reports.
- Trails Monitoring: The erosion by Cottonwood has been blocked. Flood Maintenance will correct this. The Wheatland gate has not been locked for 3 weeks. The trail from Cottonwood has metal pieces that need to be removed. The trail on the north side of the ponds is being widened. A Mazda pickup has been seen in this area. Posts may need to be installed to block the roadway; Michelle will check into this. Terri Kaiser fixed the fence damage. Poison oak needs to be cut back in some areas along the trails.
- Corral Encroachment: An adjacent landowner removed some vegetation within the mitigation bank and dumped it into the stream. The CDFG warden is enforcing this action because of the violation. Public Works sent the owner a letter stating he must pay for the damage. He is encroaching at the line of fence where the cattle are located. The County Council sent him a letter about the encroachment on March 31 stating they intend to prosecute. Public Works will meet again with County Council on May 3. In order to finalize Banking Agreement and Conservation Easement, the fence has to be moved off of the bank property. Public Works surveyed the fence line behind all of the properties along Wentworth. One of the property owners is unhappy because he contends the survey markers are incorrect; he may do his own survey. Public Works will be putting up a fence along that side of the bank.
- Independent Studio Services (ISS) Property: ISS wants to park trucks/trailers on their site. Runoff will need to be prevented from going into the mitigation bank. Mary Benson, a CAC member, indicated that there is nothing stated in their application to the City of Los Angeles that addresses runoff. Public Works will review the application and if necessary request the City to place conditions on the approved permit. A Shadow Hills homeowners association (HOA) has appealed the ISS application and a hearing has been set for May 6.
- Rock Dams/Nature Hike: April 3 - Dennis led a hike with the cub scouts, boy scouts, and the optimist club (27 people went). They collected 4 garbage bags of trash, removed 2 fire pits, and removed

many lures and fishing hooks. Poison oak needs to be trimmed back. Another rock dam removal day will be planned based on Camm Swift's availability. Additional nature hikes are to be organized by CAC members and Public Works. Chambers Group can assist in conducting the tour and removal of rock dams.

- Web Site: Public Works will look into hosting the web site and will work with Chambers Group and CAC members to supply content to the site.

9.2.1.2 Site Maintenance

Site maintenance and safety issues were discussed by John Burton and Michele Chimienti as presented in the above section on Action Items.

9.2.1.3 Status of Ongoing and Planned Programs at the Site

An overview of the current status of each program and programs to be implemented between January 2004 and June 2004 was presented by Ms. Schroeder and Mr. Carr. The protocol surveys for sensitive wildlife species, the least Bell's vireo, southwestern willow flycatcher, and brown-headed cowbird trapping were conducted through July 2004. Focused surveys did not detect the presence of least Bell's vireo, however, southwestern willow flycatcher was recorded within the mitigation bank. A total of 89 cowbirds, consisting of 46 males, 37 females, and 6 juveniles, were trapped within the Big Tujunga Wash Mitigation Bank site and vicinity between March 15 and July 15, 2004. Exotic aquatic wildlife removal efforts were not conducted during this reporting period. Sections 5.0, 6.0, and 7.0 discuss the detailed results of these programs. Water quality sampling was conducted on April 2 and July 2, 2004. Water quality for both these sampling periods were similar to baseline conditions. Water quality at the mitigation bank during the first two quarters of 2004 was relatively good and there was no contamination of the waters due to pesticides or fertilizers. In general, water quality was comparable to baseline conditions established in 2000 for most parameters. Flows were generally low during the first and second quarters of 2004 and there was an extreme algae bloom in the inflow to Tujunga Ponds during the second quarter of 2004. Recycled/reclaimed water will be used on the golf course. The golf course has its own monitoring wells and will test their groundwater. The leeching process will flush the surface and salts may impact the native alluvial scrub. The water table is approximately 25 feet below the surface. Water quality monitoring data for the golf course is needed. Their data should be a part of the public record because it is a requirement of their CUP. An investigation to determine how recycled water is addressed in the EIR for the golf course is necessary. Additionally, USFWS will be contacted to determine salt effects on the threatened Santa Ana sucker. Research on salts and their effects on alluvial scrub will also be conducted. Section 10.0 discusses the detailed results of the water quality program.

Both the upland and the riparian habitats have been in a maintenance-monitoring mode during the first 2 quarters of 2004. Monthly site visits are conducted to monitor exotic plant re-growth. Re-treatment of *Arundo* has been necessary. The riparian vegetation is not up to criteria because new plants are not recruiting. In the fall, replanting will occur close to the water and natural recruitment should follow. The upland habitat is doing much better. Upland plantings survival is at 86%. Some oak trees (*Quercus* sp.) will need to be replanted. Sections 2.0, 3.0, and 4.0 discuss in detail the status of the habitat restoration.

9.2.1.4 Elected Official Briefing

Chambers Group subcontracted MIG to provide expertise in public involvement and facilitation. MIG has facilitated all CAC meetings and has actively contacted local officials and agency personnel to update them on the status of the MMP measures. In an effort to keep elected officials up-to-date on happenings and emerging issues with the site, MIG has implemented periodic briefings for the offices of City Council Members Alex Padilla and Wendy Greul, Assembly Person Cindy Montanez, and Supervisor Michael D. Antonovich. The offices of the elected officials are supportive of the project and are interested in participating in advisory group meetings, coordinating their offices' activities with the project, and in

serving as communication links with constituents. The individual briefing of the elected officials' offices was not conducted prior to the April CAC meeting due to scheduling/contractual issues. An elected official briefing will be conducted prior to the October CAC meeting.

9.3 FUTURE ACTIONS

The CAC meetings will be held on a bi-annual basis for the remainder of the implementation period. The next CAC meeting is scheduled for 7:00 to 9:00 p.m. on Thursday, October 28, 2004 at the Hansen Dam Equestrian Center. The *Big T Wash Line* will continue to be published on a bi-annual basis for the remainder of the MMP implementation. The next edition will be published in fall 2004.

SECTION 10.0 – WATER QUALITY MONITORING PROGRAM

10.1 INTRODUCTION

In order to address both upstream and downstream water quality issues at the Big Tujunga Wash site, a water quality monitoring program was implemented. The monitoring program addresses specific water quality issues, such as pesticide/fertilizer percolation and run-off and subsequent groundwater contamination, which may occur due to the upstream development, including the Angeles National Golf Club (formerly known as Canyon Trails Golf Course). Monitoring for elevated levels of nitrogen and organophosphates in the flow entering the site will help determine whether nitrate-laden irrigation water or pesticide run-off from upstream developments are affecting the Big Tujunga Wash Mitigation Bank. The water quality monitoring program at Big Tujunga Wash will complement the monitoring program that is a requirement of the upstream Angeles National Golf Club.

Grading at the golf course began in October 2002, construction was complete by fall 2003, and the golf course was opened to the public at the end of June 2004. During construction, runoff from the golf course was captured by onsite percolation basins and retention ponds and weed abatement consisted of hand-pulling; herbicides were not used. Now that the golf course has opened, Primo™ (a grass growth inhibitor used for turf management) will be applied as necessary for turf grass maintenance and Rodeo® will be applied as necessary for giant reed control.

10.2 PURPOSE/GOALS

The water quality program is specifically designed to look for changes in water quality that may affect sensitive native fishes and amphibians in the aquatic environment. Public Works personnel established baseline water quality conditions on April 12, 2000, prior to the implementation of the MMP programs. Public Works personnel conducted the baseline water quality sampling in accordance with accepted protocols and the analyses were conducted by a certified water quality laboratory.

Based on the potential use of Rodeo® at the upstream golf course, glyphosate was added to the list of sampling parameters for the first sampling period of 2004 to establish baseline conditions before the use of herbicides began at the golf course. However, a laboratory capable of testing for trinexapac-ethyl, the active ingredient for Primo™, has not yet been identified. Therefore, the water quality program at Big Tujunga Wash includes quarterly monitoring for the following water quality parameters:

- Total Kjeldahl Nitrogen (TKN)
- Nitrite (NO₂)
- Nitrate (NO₃)
- Ammonia (NH₄)
- Orthophosphate - P
- Total Fecal Coliform
- Organochlorides *
- Total Phosphate
- Organophosphate
- Turbidity
- Glyphosate
- 1 golf course insecticide *
- 1 golf course fungicide *
- Dissolved Oxygen (DO)
- Chlorine
- Temperature (degrees Celsius)
- pH (pH units)

* not sampled on April 2, 2004 or on July 2, 2004

10.3 METHODOLOGY

An experienced Water Quality Specialist collected samples on April 2 and July 2, 2004, and the samples were taken to Montgomery Watson Laboratories, Pasadena, California, to be analyzed immediately after sampling was completed. The results of the water quality analyses were summarized in quarterly letters and in an annual report distributed to Public Works, CDFG, Regional Water Quality Control Board

(RWQCB), and USFWS. The Water Quality Monitoring Program will continue on a quarterly basis throughout the 5year duration of the MMP Program. Table 10-1 lists the locations of the four water quality monitoring sites.

In addition to water quality monitoring conducted during the first two quarters of 2004, discharge measurements in the outlet of Big Tujunga Ponds and in Haines Canyon Creek leaving the site were estimated. Stream velocities in these areas were estimated using a simple field procedure that uses a float (an object such as a ping-pong ball, pine cone, etc.) to measure stream flow.

10.3.1 Location of Sampling Sites

Water quality monitoring sites were permanently established with a Global Positioning System (GPS) receiver at various locations along Haines Canyon Creek and Big Tujunga Wash. Three monitoring sites were located along Haines Canyon Creek. One site was located at the inflow to the Tujunga Ponds, a second site was located at the outflow from the Tujunga Ponds, and the third site was located in Haines Canyon Creek, just before it exits the Mitigation Bank. A fourth water quality monitoring station was established in Big Tujunga Wash; however, sampling was not conducted at this station during this reporting period because the station was dry. Figure 10-1 shows the locations of the four sampling locations.

**Table 10-1
Big Tujunga Wash
2004 Water Quality Sampling**

Sampling Locations	Latitude	Longitude	Time of Sample	
			April 2, 2004	July 2, 2004
Haines Canyon Creek, just before exit from site	N 34 16' 2.9"	W 118 21' 22.2"	10:20 a.m.	9:15 a.m.
Haines Canyon Creek, inflow to Tujunga Ponds	N 34 16' 6.9"	W 118 20' 18.7"	11:20 a.m.	10:30 a.m.
Haines Canyon Creek, outflow from Tujunga Ponds	N 34 16' 7.1"	W 118 20' 28.3"	12:17 p.m.	11:30 a.m.
Big Tujunga Wash	N 34 16' 11.7"	W 118 21' 4.0"	Station dry	Station dry

10.3.2 Description of Analyses

A portion of the water quality parameters were analyzed in the field using the following field equipment:

- YSI Model 57 – dissolved oxygen and temperature
- HACH DR 700 – total residual chlorine
- Orion 230A – pH

All other analyses were performed in duplicate at Montgomery Watson Laboratories, Pasadena, California.

Figure 10-1 sampling locations

10.4 RESULTS

10.4.1 Comparison of Quarterly Monitoring

In general, water quality on the site was relatively good and was comparable to baseline conditions established in 2000 for most parameters. Flows were generally low during the first and second quarters of 2004 and there was an extreme algae bloom in the inflow to Tujung Ponds during the second quarter of 2004. Glyphosate (the test parameter for Rodeo[®]) was not detected at any station. Tables 10-2 and 10-3 list the data from sampling conducted during the first and second quarters of 2004. Tables 10-4 and 10-5 summarize the results from sampling conducted during the first and second quarters of 2004.

10.4.2 Discharge Measurements

Discharge flows measured in the outlet from Big Tujung Ponds and in Haines Canyon Creek leaving the site were approximated. Flows on April 2, 2004 were estimated at:

- Outlet from Big Tujung Ponds 3.8 cubic feet per second (cfs)
- Haines Canyon Creek leaving the site 6.5 cfs

Flows on July 2, 2004 were estimated at:

- Outlet from Big Tujung Ponds 2.8 cfs
- Haines Canyon Creek leaving the site 3.2 cfs

10.5 DISCUSSION

Water quality at the mitigation bank during the first two quarters of 2004 was relatively good and there was no contamination of the waters due to pesticides or fertilizers. The golf course has continued to cooperate with Public Works. The golf course is fully operational, thus it is critical that the water quality program continue to monitor all sampling parameters. Despite efforts by Montgomery Watson, the golf course could not be reached regarding an update of the chemical applications used at the golf course since its opening.

A laboratory capable of testing for trinexapac-ethyl (the active ingredient for Primo[™]) could not be identified during the first and second quarter sampling periods of 2004. Syngenta, the manufacturer of Primo[™], was consulted and all laboratories referred by Syngenta were contacted. When a laboratory is identified, trinexapac-ethyl will be tested for during future sampling periods.

10.6 RECOMMENDATIONS

It is recommended that the golf course continue to be contacted for an update of chemical applications. It is also recommended that efforts to locate a laboratory capable of testing for trinexapac-ethyl continue.

Table 10-2
Summary of Big Tujunga Wash Water Quality Results
1st Quarter 2004 (4/2/04)

Parameter	Units	Inflow to Tujunga Ponds 1	Inflow to Tujunga Ponds 2 (duplicate)	Outflow from Tujunga Ponds 1	Outflow from Tujunga Ponds 2 (duplicate)	Big Tujunga Wash 1	Big Tujunga Wash 2 (duplicate)	Haines Cyn Creek exiting Site 1	Haines Cyn Creek exiting Site 2 (duplicate)
Temperature	°C	17.5	--	17.5	--	*	--	16.0	--
Dissolved Oxygen	mg/L	9.7	--	9.4	--	*	--	9.8	--
pH	std units	7.1	--	7.2	--	*	--	8.2	--
Total residual chlorine	mg/L	ND	--	ND	--	*	--	ND	--
Ammonia-Nitrogen	mg/L	ND	ND	ND	ND	*	*	ND	ND
Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	*	*	0.35	0.31
Nitrite-Nitrogen	mg/L	ND	ND	ND	ND	*	*	ND	ND
Nitrate-Nitrogen	mg/L	8.5	8.5	6.3	6.3	*	*	3.9	3.9
Orthophosphate-P	mg/L	0.015	0.014	ND	ND	*	*	0.024	0.023
Total phosphorus -P	mg/L	0.03	0.03	ND	0.02	*	*	0.04	0.05
Glyphosate	µg/L	ND	ND	ND	ND	*	*	ND	ND
Turbidity	NTU	0.75	0.80	0.90	0.95	*	*	2.6	2.8
Fecal Coliform Bacteria	MPN/100ml	4	13	70	300	*	*	900	700
Total Coliform Bacteria	MPN/100ml	3,500	3,800	2,200	5,000	*	*	11,000	2,600
NTU: nephelometric turbidity units MPN: most probable number ND: non-detect *: no flow									

Table 10-3
Summary of Big Tujunga Wash Water Quality Results
2nd Quarter 2004 (7/2/04)

Parameter	Units	Inflow to Tujunga Ponds 1	Inflow to Tujunga Ponds 2 (duplicate)	Outflow from Tujunga Ponds 1	Outflow from Tujunga Ponds 2 (duplicate)	Big Tujunga Wash 1	Big Tujunga Wash 2 (duplicate)	Haines Cyn Creek exiting Site 1	Haines Cyn Creek exiting Site 2 (duplicate)
Temperature	°C	20.0	--	21.5	--	*	--	19.2	--
Dissolved Oxygen	mg/L	7.7	--	9.5	--	*	--	8.5	--
pH	std units	7.2	--	7.3	--	*	--	8.2	--
Total residual chlorine	mg/L	ND	--	ND	--	*	--	ND	--
Ammonia-Nitrogen	mg/L	ND	ND	ND	ND	*	*	ND	ND
Kjeldahl Nitrogen	mg/L	0.50	0.47	0.67	0.66	*	*	0.26	0.36
Nitrite-Nitrogen	mg/L	0.35	ND	ND	ND	*	*	ND	ND
Nitrate-Nitrogen	mg/L	7.7	7.9	5.9	5.8	*	*	5.3	5.3
Orthophosphate-P	mg/L	0.030	0.034	0.033	0.039	*	*	0.023	0.023
Total phosphorus -P	mg/L	0.02	0.02	0.02	0.03	*	*	0.02	0.01
Glyphosate	µg/L	ND	ND	ND	ND	*	*	ND	ND
Turbidity	NTU	0.35	0.78	0.65	0.85	*	*	0.55	0.50
Fecal Coliform Bacteria	MPN/100ml	50	80	50	80	*	*	70	30
Total Coliform Bacteria	MPN/100ml	13,000	1,700	600	2,200	*	*	2,400	1,100
NTU: nephelometric turbidity units MPN: most probable number ND: non-detect *: no flow									

Table 10-4
Big Tujunga Wash
Summary of the 1st Quarter of 2004 Water Quality Sampling Results

Parameter	Summary
Temperature	Observed temperatures were below levels of concern for growth and survival of warm water fish species. Observed temperatures in Tujunga Ponds were similar to the previous first quarter sampling periods. Observed temperatures in Haines Canyon Creek in April 2004 were similar to those in March 2002, but slightly higher than in March 2001 and 2003.
Dissolved Oxygen (DO)	Dissolved oxygen levels at the three stations with flow were above the recommended minimum for warm water species of 5.0 mg/L. Oxygen levels in the ponds in April 2004 were slightly higher than the previous 3 years. Oxygen levels in Haines Canyon Creek in April 2004 were similar to previous first quarter sampling periods.
pH	The pH of water from all stations was within the 6.5 to 8.5 range identified in the Basin Plan. Similar to previous years, pH values observed in Haines Canyon Creek in April 2004 were approximately 1 unit higher than values observed in the ponds.
Total Residual Chlorine	Residual chlorine was not detected at any station.
Nitrogen	Nitrate-nitrogen at all stations was below the drinking standard of 10 mg/L. Ammonia was not detected at any station.
Phosphorus	Total phosphorus and orthophosphorus levels were below detection limits or present in very low levels at all three stations with flow. Total phosphorus levels at all sites were within the EPA's recommended range for streams to prevent excess algae growth (<0.05-0.10 mg/L).
Glyphosate	Glyphosate was not detected at any station.
Turbidity	Turbidity was low at all stations reflecting overall low water velocities and volumes.
Bacteria	Fecal coliform levels at the outflow from the ponds and in Haines Canyon Creek leaving the site were above the water contact recreation standard of 200 MPN. In general, both fecal and total coliform levels were higher than levels observed in previous first quarter sampling periods.

Table 10-5
Big Tujunga Wash
Summary of the 2nd Quarter of 2004 Water Quality Sampling Results

Parameter	Summary
Temperature	Observed temperatures were below levels of concern for growth and survival of warm water fish species. Temperatures in July 2004 were 2 to 3° C higher than in the previous second quarter sampling surveys (mid- to late-June 2001, 2002, and 2003).
Dissolved Oxygen (DO)	Dissolved oxygen levels at the three stations with flow were above the recommended minimum for warm water species of 5.0 mg/L. Oxygen levels in July 2004 were higher in the inflow to Tujunga Ponds compared to June 2003. Oxygen levels in the outflow from Tujunga Ponds were higher in July 2004 compared to the three previous second quarter sampling periods. Oxygen levels in Haines Canyon Creek were lower in July 2004 compared to June 2003.
pH	The pH of water from all stations was within the 6.5 to 8.5 range. Similar to previous sampling years, pH values observed in Haines Canyon Creek in July 2004 were approximately 1 unit higher than values observed in the ponds.
Total Residual Chlorine	No residual chlorine was detected at any station.
Nitrogen	Nitrate-nitrogen at all stations was below the drinking standard of 10 mg/L. Ammonia was not detected at any station.
Phosphorus	Total phosphorus and orthophosphate were present in very low levels at all three stations with flow. Total phosphorus levels at all sites were below the EPA's recommended levels for streams (0.05-0.10 mg/L).
Turbidity	Turbidity was low at all stations reflecting overall low water velocities and volumes.
Bacteria	Fecal coliform levels at all stations were below the water contact recreation standard of 200 MPN. Fecal coliform levels were higher at all stations in July 2004 compared to June 2003. Total coliforms in July 2004 were similar to levels observed in June 2003.

SECTION 11.0 – REFERENCES

- Bloom, P.H. and D. Kamada
2004 Results of the 2004 Southwestern Willow Flycatcher Surveys at the Big Tujunga Wash Mitigation Bank, Los Angeles County, California. Prepared for USFWS and Chambers Group.
- Brinson, Mark
1985 *The HGM Approach Explained*. National Wetlands Newsletter.
- Chambers Group, Inc.
1998 *Draft Biological Resources Assessment and Functional Analysis of a Site in Big Tujunga Wash, Los Angeles County, California*. Prepared for County of Los Angeles Department of Public Works, Alhambra, California. April 1998.

2000 *Final Master Mitigation Plan for the Big Tujunga Wash Mitigation Bank*. Prepared for the Los Angeles County Department of Public Works, Alhambra, California. April 2000.

2001 *Final 2001 Annual Brown-headed Cowbird Trapping and Removal Program*. Prepared for the Los Angeles County Department of Public Works, Alhambra, California, October 2001.
- Ehrich, P., D. Dobkin, and D. Wheye
1988 *The Birder's Handbook: A Field Guide to the Natural History of North American Birds*. Simon & Schuster Inc., New York.
- Garrett, K. and J. Dunn
1981 *Birds of Southern California Status and Distribution*. Los Angeles Audubon Society Publication.
- Ellison, J.P.
1984 A revised classification of native aquatic communities of California. California State Resources Agency, Sacramento, CA No. 84-1.
- Graham, Frank Jr.
1998 *Bad, Bad, Birds*. Audubon. September-October: 104-108.
- Griffith Wildlife Biology (GWB)
1994a *Brown-headed Cowbird Trapping Protocol*. Unpublished document prepared by Jane C. Griffith and John T. Griffith, Griffith Wildlife Biology, Calumet, Michigan.

1994b *San Joaquin Hills Transportation Corridor; Brown-Headed Cowbird Removal Program*. Prepared for California Corridor Constructors.
- Harris, J.H.
1991 *Effects of Brood Parasitism by Brown-Headed Cowbirds on Willow Flycatcher Nesting Success Along the Kern River, California*. *Western Birds* 22:13-26.
- Laymon, S. S.
1987 *Brown-Headed Cowbirds in California: Historical Perspectives and Management Opportunities in Riparian Habitats*. *Western Birds* 18:63-70.
- Mayfield, H. F.
1977 Brown-Headed Cowbird: Agent of Extermination? *American Birds* 31:107-113.
- Montgomery Watson Harza (MWH)
2004 *Water Quality Monitoring Report 1st Quarter 2004 for Master Mitigation Plan for the Big Tujunga Wash Mitigation Bank*. Prepared for Chambers Group.

- 2004 *Water Quality Monitoring Report 2nd Quarter 2004 for Master Mitigation Plan for the Big Tujunga Wash Mitigation Bank*. Prepared for Chambers Group.
- National Geographic
2002 *Field Guide to the Birds of North America*, Fourth edition.
- Sibley, D.A.
2000 *National Audubon Society The Sibley Guide to Birds*. Alfred A. Knopf, Inc., New York, New York.
- Sogge, M., R. Marshall, S. Sferra, and T. Tibbitts
1997 A southwestern willow flycatcher natural history summary and survey protocol. USGS Biological Resources Division, Colorado Plateau Research Station, Northern Arizona University. 36 pp. Plus appendix.
- Stafford M. D. and B. E. Valentine
1985 *A Preliminary Report on the Biology of the Willow Flycatcher in Central Sierra Nevada*. Cal-Neva Wildlife Transactions 66-77.
- Stallcup, R.
1993 *Another Silent Spring?* Pt. Reyes Bird Observatory News, Spring 1993.
- Stebbins, R.C.
2003 *A Field Guide to Western Reptiles and Amphibians, Third Edition*. Houghton Mifflin Company, Boston, Massachusetts.
- Stokes, D. and L. Stokes.
1996 *Stokes Field Guide to Birds (western region)*. Little, Brown and Company Limited, New York, New York.
- Swift, C.C., T.R. Haglund, M. Ruiz, and R.N. Fisher
1993 *The status and distribution of the freshwater fishes of southern California*. Bull. So. Calif. Acad. Sci. 92:101-167.
- Unitt, P.
1984 *The Birds of San Diego County*. San Diego Society of Natural History, Memoir 13.
- U.S. Fish and Wildlife Service (USFWS)
1991 Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule. In Federal Register Vol. 56, No. 225, government publications.
1994 Endangered and Threatened Wildlife and Plants;. In Federal Register Vol. 56, No. 225, government publications. Final Determination of Critical Habitat for the Least Bell's Vireo.
1997 Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Southwestern Willow Flycatcher. In Federal Register Vol. 62, No. 140, government publications.
2000 Southwestern Willow Flycatcher Protocol Revision 2000. California/Nevada Operations Office, Sacramento, California. Letter dated July 11, 2000. 4 pp.
- U.S. Geological Survey (USGS)
1959 Sunland 7.5-minute topographic quadrangle.
- Willet, G.
1933 *Revised List of Birds of Southwestern California*. *Pacific Coast Avifauna* 27: 1-203.